

4.0 Site Characterization

Subsurface investigations performed at Former Range 43, Parcel 97Q; Range, Choccolocco Corridor, Parcel 144Q-X; and Impact Area, Choccolocco Corridor, Parcel 147Q-X, provided soil, geologic, and groundwater data used to characterize the geology and hydrogeology of the site.

4.1 Regional and Site Geology

4.1.1 Regional Geology

Calhoun County includes parts of two physiographic provinces: the Piedmont Upland Province and the Valley and Ridge Province. The Piedmont Upland Province occupies the extreme eastern and southeastern portions of the county and is characterized by metamorphosed sedimentary rocks. The generally accepted range in age of these metamorphics is Cambrian to Devonian.

The majority of Calhoun County, including the Main Post of FTMC, lies within the Appalachian fold-and-thrust structural belt (Valley and Ridge Province) where southeastward-dipping thrust faults with associated minor folding are the predominant structural features. The fold-and-thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted, with major structures and faults striking in a northeast-southwest direction.

Northwestward transport of the Paleozoic rock sequence along the thrust faults has resulted in the imbricate stacking of large slabs of rock referred to as thrust sheets. Within an individual thrust sheet, smaller faults may splay off the larger thrust fault, resulting in imbricate stacking of rock units within an individual thrust sheet (Osborne and Szabo, 1984). Geologic contacts in this region generally strike parallel to the faults, and repetition of lithologic units is common in vertical sequences. Geologic formations within the Valley and Ridge Province portion of Calhoun County have been mapped by Warman and Causey (1962), Osborne and Szabo (1984), and Moser and DeJarnette (1992) and vary in age from Lower Cambrian to Pennsylvanian.

The basal unit of the sedimentary sequence in Calhoun County is the Cambrian Chilhowee Group. The Chilhowee Group consists of the Cochran, Nichols, Wilson Ridge, and Weisner Formations (Osborne and Szabo, 1984), but in Calhoun County it is either undifferentiated or

divided into the Cochran and Nichols Formations and an upper, undifferentiated Wilson Ridge and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish gray siltstone and mudstone. Massive to laminated greenish gray and black mudstone makes up the Nichols Formation, with thin interbeds of siltstone and very fine-grained sandstone (Osborne et al., 1988). These two formations are mapped only in the eastern part of the county.

The Wilson Ridge and Weisner Formations are undifferentiated in Calhoun County and consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appears to dominate the unit and consists primarily of coarse-grained, vitreous quartzite and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consists of sandy and micaceous shale and silty, micaceous mudstone, which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

The Cambrian Shady Dolomite overlies the Weisner Formation northeast, east, and southwest of the Main Post and consists of interlayered bluish gray or pale yellowish gray sandy dolomitic limestone and siliceous dolomite with coarsely crystalline, porous chert (Osborne et al., 1989). A variegated shale and clayey silt have been included within the lower part of the Shady Dolomite (Cloud, 1966). Material similar to this lower shale unit was noted in core holes drilled by the Alabama Geologic Survey on FTMC (Osborne and Szabo, 1984). The character of the Shady Dolomite in the FTMC vicinity and the true assignment of the shale at this stratigraphic interval are still uncertain (Osborne, 1999).

The Rome Formation overlies the Shady Dolomite and locally occurs to the northwest and southeast of the Main Post, as mapped by Warman and Causey (1962) and Osborne and Szabo (1984), and immediately to the west of Reilly Airfield (Osborne and Szabo, 1984). The Rome Formation consists of variegated, thinly interbedded grayish red-purple mudstone, shale, siltstone, and greenish red and light gray sandstone, with locally occurring limestone and dolomite. Weaver Cave, located approximately one mile west of the northwest boundary of the Main Post, is situated in gray dolomite and limestone mapped as the Rome Formation (Osborne et al., 1997). The Conasauga Formation overlies the Rome Formation and occurs along anticlinal axes in the northeastern portion of Pelham Range (Warman and Causey, 1962; Osborne and Szabo, 1984) and the northern portion of the Main Post (Osborne et al., 1997). The

Conasauga Formation is composed of dark gray, finely to coarsely crystalline, medium- to thick-bedded dolomite with minor shale and chert (Osborne et al., 1989).

Overlying the Conasauga Formation is the Knox Group, which is composed of the Copper Ridge and Chepultepec dolomites of Cambro-Ordovician age. The Knox Group is undifferentiated in Calhoun County and consists of light medium gray, fine to medium crystalline, variably bedded to laminated, siliceous dolomite and dolomitic limestone that weather to a chert residuum (Osborne and Szabo, 1984). The Knox Group underlies a large portion of the Pelham Range area.

The Ordovician Newala and Little Oak Limestones overlie the Knox Group. The Newala Limestone consists of light to dark gray, micritic, thick-bedded limestone with minor dolomite. The Little Oak Limestone is comprised of dark gray, medium- to thick-bedded, fossiliferous, argillaceous to silty limestone with chert nodules. These limestone units are mapped as undifferentiated at FTMC and in other parts of Calhoun County. The Athens Shale overlies the Ordovician limestone units. The Athens Shale consists of dark gray to black shale and graptolitic shale with localized interbedded dark gray limestone (Osborne et al., 1989). These units occur within an eroded “window” in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

Other Ordovician-aged bedrock units mapped in Calhoun County include the Greensport Formation, Colvin Mountain Sandstone, and Sequatchie Formation. These units consist of various siltstones, sandstones, shales, dolomites, and limestones and are mapped as one, undifferentiated unit in some areas of Calhoun County. The only Silurian-age sedimentary formation mapped in Calhoun County is the Red Mountain Formation. This unit consists of interbedded red sandstone, siltstone, and shale with greenish gray to red silty and sandy limestone.

The Devonian Frog Mountain Sandstone consists of sandstone and quartzitic sandstone with shale interbeds, dolomudstone, and glauconitic limestone (Osborne, et al., 1988). This unit locally occurs in the western portion of Pelham Range.

The Mississippian Fort Payne Chert and the Maury Formation overlie the Frog Mountain Sandstone and are composed of dark to light gray limestone with abundant chert nodules and greenish gray to grayish red phosphatic shale, with increasing amounts of calcareous chert

towards the upper portion of the formation (Osborne and Szabo, 1984). These units occur in the northwestern portion of Pelham Range. Overlying the Fort Payne Chert is the Floyd Shale, also of Mississippian age, which consists of thin-bedded, fissile brown to black shale with thin intercalated limestone layers and interbedded sandstone. Osborne and Szabo (1984) reassigned the Floyd Shale, which was mapped by Warman and Causey (1962) on the Main Post of FTMC, to the Ordovician Athens Shale based on fossil data.

The Pennsylvanian Parkwood Formation overlies the Floyd Shale and consists of a medium to dark gray, silty clay, shale, and mudstone with interbedded light to medium gray, very fine to fine grained, argillaceous, micaceous sandstone. Locally the Parkwood Formation also contains beds of medium to dark gray, argillaceous, bioclastic to cherty limestone and beds of clayey coal up to a few inches thick (Raymond et al., 1988). The Parkwood Formation in Calhoun County is generally found within a structurally complex area known as the Coosa deformed belt. In the deformed belt, the Parkwood Formation and Floyd Shale are mapped as undifferentiated because their lithologic similarity and significant deformation make it impractical to map the contact (Thomas and Drahovzal, 1974; Osborne et al., 1988). The undifferentiated Parkwood Formation and Floyd Shale are found throughout the western quarter of Pelham Range.

The Jacksonville thrust fault is the most significant structural geological feature in the vicinity of the Main Post of FTMC, both for its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. The trace of the fault extends northeastward for approximately 39 miles between Bynum, Alabama, and Piedmont, Alabama. The fault is interpreted as a major splay of the Pell City fault (Osborne and Szabo, 1984). The Ordovician sequence that makes up the Eden thrust sheet is exposed at FTMC through an eroded window, or fenster, in the overlying thrust sheet. Rocks within the window display complex folding, with the folds being overturned and tight to isoclinal. The carbonates and shales locally exhibit well-developed cleavage (Osborne and Szabo, 1984). The FTMC window is framed on the northwest by the Rome Formation; north by the Conasauga Formation; northeast, east, and southwest by the Shady Dolomite; and southeast and southwest by the Chilhowee Group (Osborne et al., 1997). Two small klippen of the Shady Dolomite, bounded by the Jacksonville fault, have been recognized adjacent to the Pell City fault at the FTMC window (Osborne et al., 1997).

The Pell City fault serves as a fault contact between the bedrock within the FTMC window and the Rome and Conasauga Formations. The trace of the Pell City fault is also exposed approximately nine miles west of the FTMC window on Pelham Range, where it traverses

northeast to southwest across the western quarter of Pelham Range. Here, the trace of the Pell City fault marks the boundary between the Pell City thrust sheet and the Coosa deformed belt.

The eastern three-quarters of Pelham Range is located within the Pell City thrust sheet, while the remaining western quarter of Pelham Range is located within the Coosa deformed belt. The Pell City thrust sheet is a large-scale thrust sheet containing Cambrian and Ordovician rocks and is relatively less structurally complex than the Coosa deformed belt (Thomas and Neathery, 1982). The Pell City thrust sheet is exposed between the traces of the Jacksonville and Pell City faults along the western boundary of the FTMC window and along the trace of the Pell City fault on Pelham Range (Thomas and Neathery, 1982; Osborne et al., 1988). The Coosa deformed belt is a narrow northeast-to-southwest-trending linear zone of complex structure (approximately 5 to 20 miles wide and approximately 90 miles in length) consisting mainly of thin imbricate thrust slices. The structure within these imbricate thrust slices is often internally complicated by small-scale folding and additional thrust faults (Thomas and Drahovzal, 1974).

4.1.2 Site Geology

Soils at Parcels 97Q, 144Q-X, and 147Q-X fall mainly into three mapping units: Stony Rough Land sandstone in the east, Anniston and Allen gravelly loam in the southern-central area, and Anniston and Allen stony loam in the rest of the area of investigation (U.S. Department of Agriculture [USDA], 1961).

Stony Rough Land sandstone (Ss) consists of well-drained, shallow or stony, friable, medium to strongly acidic soils. Slopes generally are more than 25 percent. Erosion is slight to severe, and some of the slopes have lost all of their original surface soil. The soil material is generally shallow over bedrock. Runoff is high, permeability is moderate to rapid, infiltration is slow, and the capacity for available moisture is low. The depth to bedrock is typically less than 2.5 feet, with depth to water exceeding 20 feet bgs (USDA, 1961).

The Anniston and Allen Series of soils consists of strongly acidic, deep, well-drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher-lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. Sandstone and quartzite gravel and cobbles, measuring as much as 8 inches in diameter, are common on the surface and throughout the soil. For this soil series, the depth to bedrock is typically from 2 feet to greater than 10 feet, with depth to water greater

than 20 feet (USDA, 1961). The stony loam series differs from the gravelly loams in having less erosion, a thicker surface layer, and more stones.

Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded (AcC2), consist of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high (USDA, 1961).

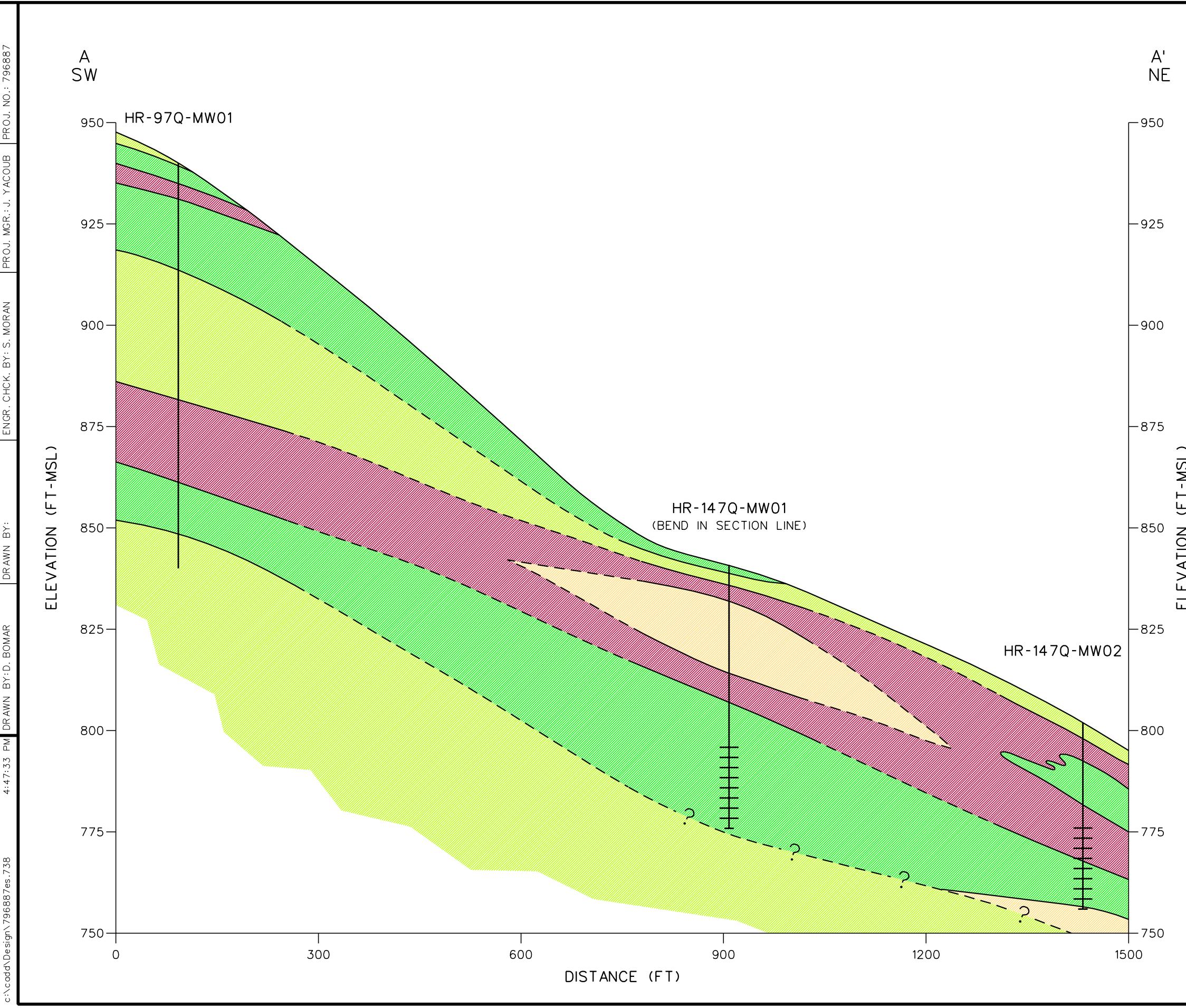
Anniston and Allen stony loams, 10 to 25 percent slopes (AdE), consist of a very dark brown to very dark grayish brown stony loam surface layer 4 to 8 inches thick. At a depth of about 10 inches, this material grades into a dark red or dark reddish brown stony fine sandy clay loam. These soils are not well suited to cultivation due to the stoniness and strong slopes, and therefore most of the acreage is woodland (USDA, 1961).

Bedrock beneath Parcels 97Q, 144Q-X, and 148Q-X is mapped as the undifferentiated Chilhowee Group in the west, Shady Dolomite in the central area, and Rome Formation in the east. The undifferentiated Chilhowee Group consists of a basal unit of arkosic conglomerate and mudstone overlain by a unit of greenish gray mudstone with minor siltstone and sandstone. The sequence grades upward into a white to moderately reddish orange friable sandstone and conglomerate containing interbedded gray silty mudstone (Raymond et al., 1988). The undifferentiated Chilhowee Group is overlain by the Shady Dolomite. The Shady Dolomite is typically bluish gray, thick-bedded, medium crystalline limestone and light to dark gray, argillaceous to sandy, massive to laminated dolomite with a local unit of silty clay and clayey siltstone at the base (Raymond et al., 1988). The Shady Dolomite is overlain by the Rome Formation to the east. The Rome Formation consists of variegated, thinly interbedded grayish red-purple mudstone, shale, siltstone, and greenish red and light gray sandstone, with locally occurring limestone and dolomite (Raymond et al., 1988).

A geologic cross section was constructed using the hollow-stem auger boring data, as shown on Figure 4-1. The cross section location is shown on Figure 3-1. The residuum encountered in shallow borings was typically described as medium dark brown to reddish brown clay and silt with some quartzite and sandstone gravel and little sand. This description is consistent with the Anniston and Allen series soils. The residuum encountered during drilling activities at well

LEGEND

	SCREEN INTERVAL
- - ? - -	CONTACT DASHED WHERE INFERRED
	CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL
	CLAY AND SILT, TRACE GRAVEL
	CLAY AND SAND, SOME SILT
	SAND AND GRAVEL, SOME CLAY



locations was described as yellowish orange, reddish brown, and light brown clay with varying amounts of silt, sand, and sandstone gravel. Hollow-stem auger refusal was encountered at depths of 30 and 46 feet bgs at HR-144Q-MW01 and HR-147Q-MW02, respectively. The soils encountered prior to refusal were described as light brown to yellowish orange clay and weathered sandstone gravel with some sand and little silt.

4.2 Site Hydrology

4.2.1 Surface Hydrology

Precipitation in the form of rainfall averages about 53 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates (U.S. Department of Commerce, 1998). The major surface water feature in the Choccolocco Corridor is Choccolocco Creek, which flows south through the Choccolocco Corridor. Choccolocco Creek and its tributaries drain all of Choccolocco Corridor and ultimately empty into the Coosa River.

There are no perennial surface water bodies (e.g., streams, ponds) in the immediate vicinity of Parcels 97Q, 144Q-X, and 147Q-X. Surface water runoff collects in three intermittent drainages that flow to the east-southeast.

4.2.2 Hydrogeology

Static groundwater levels were measured in monitoring wells at Parcels 97Q, 144Q-X, and 147Q-X, and in wells at adjacent parcels, on October 18, 2003, as summarized in Table 3-4. Groundwater elevations were calculated by measuring the depth to groundwater relative to the surveyed top-of-casing elevations. A groundwater flow map constructed using the October 2002 data is shown on Figure 4-2. Based on these water level data, groundwater elevations correspond with topography and flow direction is to the east-southeast.

5.0 Summary of Analytical Results

The results of the chemical analysis of samples collected at Former Range 43, Parcel 97Q; Range, Choccolocco Corridor, Parcel 144Q-X; and Impact Area, Choccolocco Corridor, Parcel 147Q-X, indicate that metals, VOCs, pesticides, two herbicides, and one explosive compound were detected in site media. SVOCs were not detected in site media. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, the analytical results were compared to the human health SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by Shaw for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC.

Metals concentrations exceeding the SSSLs and ESVs were subsequently compared to metals background screening values to determine if the metals concentrations are within natural background concentrations (Science Applications International Corporation, 1998).

The following sections and Tables 5-1 through 5-3 summarize the results of the comparison of detected constituent concentrations to the SSSLs, ESVs, and background screening values. Complete analytical results are presented in Appendix F.

5.1 Surface and Depositional Soil Analytical Results

Eighteen surface soil samples and seven depositional soil samples were collected for chemical analysis at Parcels 97Q, 144Q-X, and 147Q-X. Surface and depositional soil samples were collected from the uppermost foot of soil at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs, ESVs, and metals background screening values, as presented in Table 5-1.

Metals. A total of 22 metals were detected in the surface and depositional soil samples. The concentrations of 11 metals (aluminum, antimony, arsenic, cadmium, chromium, iron, lead, manganese, thallium, vanadium, and zinc) exceeded their respective SSSLs in one or more samples. Of these, eight metals also exceeded their respective background values:

- Aluminum (17,700 to 36,100 milligrams per kilogram [mg/kg]) exceeded its SSSL (7,803 mg/kg) and background (16,306 mg/kg) at seven sample locations.

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-144Q-DEP01 QM0012 5-Sep-02 0- 1				HR-144Q-DEP02 QM0013 4-Sep-02 0- 1				HR-144Q-DEP03 QM0015 4-Sep-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.39E+04			YES	YES	1.23E+04			YES	YES	1.00E+04			YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.30E+00			YES		2.88E+00			YES		3.08E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	2.55E+02		YES		YES	1.93E+02		YES		YES	1.00E+02				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	2.43E+00		YES		YES	1.52E+00		YES		YES	5.66E-01	J			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	6.86E+02					4.55E+02					3.14E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	7.98E+00				YES	7.97E+00				YES	1.06E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.59E+01	YES				1.38E+01					3.36E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	1.91E+01	YES				1.30E+02		YES		YES	7.61E+00				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.44E+04			YES	YES	1.11E+04			YES	YES	1.38E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.87E+02	YES		YES	YES	8.40E+02		YES	YES	YES	2.38E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	7.87E+02					6.99E+02					4.79E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.65E+03		YES	YES	YES	1.40E+03			YES	YES	4.98E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	8.07E-02	J	YES			8.84E-02	J	YES			6.71E-02	J			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	8.08E+00					6.02E+00					4.15E+00				
Potassium	mg/kg	8.00E+02	NA	NA	1.53E+03		YES			1.36E+03		YES			7.21E+02				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.83E+00		YES		YES	1.70E+00		YES		YES	1.22E+00		YES		YES
Sodium	mg/kg	6.34E+02	NA	NA	3.66E+01	J				4.66E+01	J				2.08E+01	J			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.35E+01				YES	1.27E+01				YES	1.48E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.21E+01					2.01E+01					1.50E+01				
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-144Q-DEP01				HR-144Q-DEP02				HR-144Q-DEP03							
				QM0012				QM0013				QM0015							
				5-Sep-02				4-Sep-02				4-Sep-02							
				0- 1				0- 1				0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location					HR-144Q-DEP04				HR-144Q-GP01				HR-144Q-GP02						
					QM0016				QM0001				QM0003						
					4-Sep-02				23-Jul-02				23-Jul-02						
					0- 1				0- 1				0- 1						
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.11E+04			YES	YES	1.04E+04			YES	YES	7.60E+03			YES	
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.17E+00			YES		3.35E+00			YES		3.82E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.35E+02		YES			7.11E+01					8.70E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	9.18E-01	J	YES			4.27E-01	J				ND				
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	5.50E+02					1.28E+02					3.92E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.18E+01			YES	1.08E+01				YES	7.14E+00				YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	5.79E+00					4.00E+00	J				5.39E+00	J			
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	3.52E+01		YES			1.65E+01		YES			8.87E+01		YES	YES	
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.40E+04			YES	YES	1.49E+04			YES	YES	8.52E+03		YES	YES	
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.64E+02		YES		YES	1.99E+02	J	YES		YES	1.27E+03	J	YES	YES	
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	4.81E+02					3.79E+02					3.56E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	6.99E+02			YES	YES	2.32E+02	J			YES	1.05E+03	J		YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	7.43E-02	J				4.85E-02	J				8.26E-02	J	YES		
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	5.06E+00					3.82E+00					4.65E+00				
Potassium	mg/kg	8.00E+02	NA	NA	4.45E+02	B				3.10E+02	J				3.87E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.29E+00		YES		YES	6.15E-01	B	YES			8.36E-01	B	YES	YES	
Sodium	mg/kg	6.34E+02	NA	NA	2.35E+01	J				ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.86E+01				YES	1.55E+01				YES	1.25E+01			YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.88E+01					1.54E+01	J				2.93E+01	J			
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	2.90E-02					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	3.40E-01					NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	ND					NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-144Q-DEP04				HR-144Q-GP01				HR-144Q-GP02							
				QM0016				QM0001				QM0003							
				4-Sep-02				23-Jul-02				23-Jul-02							
				0- 1				0- 1				0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	1.50E-03	J				NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	ND					NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	ND					NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	ND					NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	6.30E-03	J			YES	NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	ND					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	ND					NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	ND					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	ND					NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	ND					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	ND					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	ND					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	ND					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	ND					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	ND					NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location Sample Number Sample Date Sample Depth (Feet)				HR-144Q-GP03 QM0005 23-Jul-02 0- 1				HR-144Q-GP04 QM0007 24-Jul-02 0- 1				HR-144Q-MW01 QM0010 23-Jul-02 0- 1									
				Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG
METALS																					
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	6.65E+03				YES	1.18E+04				YES	YES	9.84E+03				YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					2.25E+01	J	YES	YES	YES	ND						
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.93E+00				YES	8.52E+00				YES		2.84E+00				YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	4.38E+01					5.31E+02		YES		YES	8.80E+01						
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	4.39E-01	J				1.11E+00	J	YES		YES	4.19E-01	J					
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					1.88E+01		YES	YES	YES	ND						
Calcium	mg/kg	1.72E+03	NA	NA	1.29E+04		YES			1.58E+04		YES			3.81E+02						
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	2.20E+01					YES	2.06E+01				YES	9.60E+00					YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.66E+00	J				5.25E+00	J				4.51E+00	J					
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	2.15E+01		YES			1.12E+02		YES		YES	1.61E+01		YES				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.94E+04				YES	YES	3.24E+04			YES	YES	8.17E+03				YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	3.65E+01	J				1.88E+02	J	YES		YES	6.19E+01	J	YES		YES		
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	7.48E+03		YES			4.71E+02					3.69E+02						
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.53E+02	J			YES	1.43E+03	J			YES	YES	5.84E+02	J			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					1.23E-01	J	YES		YES	5.00E-02	J					
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	3.38E+00					2.70E+01		YES			5.57E+00						
Potassium	mg/kg	8.00E+02	NA	NA	7.54E+02					4.77E+02	J				5.14E+02	J					
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					1.88E+00	J	YES		YES	ND						
Sodium	mg/kg	6.34E+02	NA	NA	2.54E+01	J				1.15E+02	J				ND						
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND										ND						
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.32E+01				YES	9.23E+00				YES	1.09E+01					YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.79E+01	J				9.54E+03	J	YES	YES	YES	2.88E+01	J					
VOLATILE ORGANIC COMPOUNDS																					
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					2.90E-02	J				NR						
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					6.30E-01	J				NR						
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR							ND			NR						
p-Cymene	mg/kg	NA	1.55E+03	NA	NR							ND			NR						

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

(Page 6 of 18)

Sample Location				HR-144Q-GP03				HR-144Q-GP04				HR-144Q-MW01							
				QM0005 23-Jul-02 0- 1				QM0007 24-Jul-02 0- 1				QM0010 23-Jul-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					3.00E-03	J			YES	NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					3.30E-03	J			YES	NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					2.50E-03	J			YES	NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					9.60E-04	J			YES	NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					ND				NR					
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					3.30E-03	J			NR					
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					ND				NR					
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					5.90E-04	J			NR					
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					2.60E-02	J			YES	NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					1.60E-03	J			NR					
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					1.30E-03	J			YES	NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					8.60E-04	J			YES	NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					ND				NR					
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					8.90E-03	J			NR					
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					ND				NR					
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	1.10E-01	J				ND				ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-147Q-DEP01 QN0007 5-Sep-02 0- 1				HR-147Q-DEP02 QN0008 5-Sep-02 0- 1				HR-147Q-GP01 QN0001 24-Jul-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.20E+04			YES	YES	1.15E+04			YES	YES	9.21E+03			YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.97E+00			YES		2.73E+00			YES		2.77E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	7.83E+01					8.17E+01					8.93E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	7.25E-01	J				8.22E-01	J	YES			4.85E-01	J			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	1.27E+02					1.53E+02					1.27E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.40E+01				YES	1.03E+01					8.10E+00			YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	4.24E+00					6.82E+00					4.70E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	6.17E+00					6.32E+00					4.86E+00				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.45E+04			YES	YES	1.24E+04			YES	YES	8.13E+03			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.20E+01					1.54E+01					2.25E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	5.15E+02					4.19E+02					3.66E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	5.46E+02			YES	YES	1.09E+03			YES	YES	4.88E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	7.82E-02	J				8.43E-02	J	YES			6.23E-02	J			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	5.74E+00					5.85E+00					3.39E+00				
Potassium	mg/kg	8.00E+02	NA	NA	5.64E+02					5.02E+02	J				3.79E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.17E+00		YES		YES	5.70E-01	J	YES			ND				
Sodium	mg/kg	6.34E+02	NA	NA	ND					2.63E+01	J				ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.78E+01				YES	1.62E+01					9.80E+00			YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.76E+01					1.51E+01					1.45E+01	J			
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-147Q-DEP01				HR-147Q-DEP02				HR-147Q-GP01							
				QN0007				QN0008				QN0001							
				5-Sep-02				5-Sep-02				24-Jul-02							
				0- 1				0- 1				0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-147Q-MW01 QN0003 25-Jul-02 0- 1				HR-147Q-MW02 QN0005 24-Jul-02 0- 1				HR-97Q-DEP01 QL0023 4-Sep-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	7.69E+03				YES	8.54E+03			YES	YES	7.63E+03			YES	
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.46E+00			YES		2.53E+00			YES		2.67E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	5.88E+01					8.06E+01					9.62E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND					6.93E-01	J				4.38E-01	J			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	2.41E+02					1.11E+02	J				4.82E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.05E+01				YES	6.56E+00				YES	9.80E+00			YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.87E+00	J				8.29E+00					4.92E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.55E+00					5.69E+00					1.37E+01	YES			
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.08E+04				YES	8.53E+03				YES	1.70E+04		YES	YES	
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	2.81E+01					2.50E+01					7.94E+01	YES	YES	YES	
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	2.88E+02					3.34E+02					3.84E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.53E+02				YES	1.05E+03				YES	YES	4.30E+02		YES	
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	3.33E-02	J				5.44E-02	J				5.08E-02	J			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	2.70E+00					3.39E+00					5.63E+00				
Potassium	mg/kg	8.00E+02	NA	NA	4.32E+02	J				3.96E+02	J				5.36E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					1.10E+00	J	YES	YES	
Sodium	mg/kg	6.34E+02	NA	NA	ND					ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.05E+01				YES	1.01E+01				YES	1.35E+01			YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.43E+01	J				1.11E+01	J				1.94E+01				
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-147Q-MW01				HR-147Q-MW02				HR-97Q-DEP01							
				QN0003 25-Jul-02 0- 1				QN0005 24-Jul-02 0- 1				QL0023 4-Sep-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-97Q-GP01				HR-97Q-GP02				HR-97Q-GP03							
				QL0001 23-Jul-02 0- 1				QL0003 23-Jul-02 0- 1				QL0005 23-Jul-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.82E+04		YES	YES	YES	1.77E+04		YES	YES	YES	3.04E+04		YES	YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					1.11E+01	J	YES	YES	YES	ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	4.62E+00			YES		7.66E+00			YES		1.02E+01			YES	YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.10E+02					1.46E+02		YES			1.01E+02				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	8.00E-01	J	YES			8.89E-01	J	YES			8.91E-01	J	YES		
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					9.37E-01	J	YES			ND				
Calcium	mg/kg	1.72E+03	NA	NA	1.78E+02					2.48E+03		YES			2.60E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.24E+01				YES	2.20E+01				YES	3.17E+01			YES	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.72E+01		YES			1.28E+01					1.01E+01				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	3.23E+01		YES			5.76E+01		YES		YES	8.66E+01		YES		YES
Iron	mg/kg	3.42E+04	2.34E+04	2.00E+02	1.30E+04				YES	6.20E+04		YES	YES	YES	4.53E+04		YES	YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	2.02E+02	J	YES		YES	4.14E+02	J	YES	YES	YES	4.01E+02	J	YES	YES	YES
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	6.17E+02					1.62E+03		YES			5.95E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	2.00E+03		YES	YES	YES	2.14E+03		YES	YES	YES	7.04E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	7.46E-02	J				6.82E-01		YES		YES	6.95E-02	J			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	8.69E+00					1.70E+01		YES			1.37E+01		YES		
Potassium	mg/kg	8.00E+02	NA	NA	5.52E+02	J				5.92E+02					4.53E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	7.65E-01	J	YES			2.95E+00		YES		YES	2.05E+00		YES		YES
Sodium	mg/kg	6.34E+02	NA	NA	2.65E+01	J				4.06E+01	J				1.99E+01	J			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					1.49E+00	J		YES	YES	9.11E-01	J		YES	
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.23E+01				YES	2.87E+01				YES	4.56E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	3.20E+01	J				3.51E+03	J	YES	YES	YES	4.60E+01	J	YES		
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-97Q-GP01				HR-97Q-GP02				HR-97Q-GP03							
				QL0001				QL0003				QL0005							
				23-Jul-02				23-Jul-02				23-Jul-02							
Sample Depth (Feet)				0- 1				0- 1				0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-97Q-GP04				HR-97Q-GP05				HR-97Q-GP06							
				QL0007				QL0010				QL0012							
				25-Jul-02				24-Jul-02				29-Jul-02							
				0- 1				0- 1				0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	2.70E+04		YES	YES	YES	2.09E+04		YES	YES	YES	8.28E+03		YES	YES	
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	8.33E+00			YES		6.46E+00			YES		2.01E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.13E+02					1.39E+02		YES			3.62E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	8.42E-01	J	YES			8.91E-01	J	YES			ND				
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	2.88E+02					4.88E+02					1.09E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	3.13E+01			YES	YES	2.33E+01			YES	YES	7.30E+00			YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.23E+01					1.51E+01					1.51E+00	J			
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	4.80E+01		YES		YES	8.12E+01		YES		YES	8.10E+01		YES	YES	
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	3.57E+04		YES	YES	YES	2.54E+04			YES	YES	7.83E+03		YES	YES	
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	2.59E+02	J	YES		YES	6.66E+02	J	YES	YES	YES	6.32E+02		YES	YES	
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	7.13E+02					6.34E+02					1.93E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	9.13E+02			YES	YES	2.18E+03		YES	YES	YES	1.27E+02			YES	
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	6.59E-02	J				8.00E-02	J	YES			6.47E-02	J			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	1.19E+01		YES			1.12E+01		YES			2.54E+00	B			
Potassium	mg/kg	8.00E+02	NA	NA	6.25E+02					4.92E+02	J				1.06E+02	B			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	1.30E+00		YES		YES	1.32E+00		YES		YES	ND				
Sodium	mg/kg	6.34E+02	NA	NA	2.80E+01	J				ND					2.19E+01	B			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	1.22E+00	J		YES	YES	ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	4.61E+01				YES	3.15E+01				YES	1.19E+01			YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	3.83E+01	J				3.74E+01	J				1.82E+01				
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	2.30E-02					NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	7.90E-01	J				NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	1.70E-03	J				NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	4.00E-03	J				NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-97Q-GP04 QL0007 25-Jul-02 0- 1				HR-97Q-GP05 QL0010 24-Jul-02 0- 1				HR-97Q-GP06 QL0012 29-Jul-02 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	ND					NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	3.50E-03	J			YES	NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	1.20E-02				YES	NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	2.00E-03	J			YES	NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	ND					NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	ND					NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	1.70E-03	J				NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	ND					NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	7.80E-03	J				NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	ND					NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	ND					NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	ND					NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	ND					NR					NR				
HERBICIDES																			
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	ND					NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	2.20E+00	J			YES	NR					NR				
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location					HR-97Q-GP07				HR-97Q-GP08					
					QL0014 29-Jul-02 0- 1				QL0016 25-Jul-02 0- 1					
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS														
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.50E+04			YES	YES	1.95E+04		YES	YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	4.90E+00			YES		4.71E+00				YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	9.55E+01					2.89E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	7.20E-01	J				ND				
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	1.38E+02					1.24E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.21E+01			YES	YES	2.48E+01			YES	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.36E+01					1.67E+00	J			
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.01E+00					4.45E+01		YES		YES
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.71E+04			YES	YES	2.40E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	3.85E+01					1.45E+02		YES		YES
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	3.35E+02					2.49E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	2.04E+03		YES	YES	YES	7.47E+01				
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	7.66E-02	J				1.76E-01		YES		YES
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	7.91E+00					3.11E+00	B			
Potassium	mg/kg	8.00E+02	NA	NA	1.58E+02	B				1.59E+02	B			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	7.32E-01	J	YES			6.33E-01	J	YES		
Sodium	mg/kg	6.34E+02	NA	NA	2.34E+01	B				ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.37E+01			YES	YES	4.19E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.70E+01					1.55E+01				
VOLATILE ORGANIC COMPOUNDS														
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					NR				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					NR				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					NR				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					NR				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location					HR-97Q-GP07				HR-97Q-GP08					
					QL0014	0-1			QL0016	25-Jul-02				
					29-Jul-02				0-1					
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES														
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					NR				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					NR				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					NR				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					NR				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					NR				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					NR				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					NR				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					NR				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					NR				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					NR				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					NR				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					NR				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					NR				
HERBICIDES														
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					NR				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					NR				
EXPLOSIVES														
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

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Sample Location				HR-97Q-GP09				HR-97Q-MW01						
				QL0018				QL0020						
				23-Jul-02				24-Jul-02						
Sample Depth (Feet)				0- 1				0- 1						
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS														
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	8.40E+03			YES	YES	3.61E+04		YES	YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.94E+00			YES		8.83E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.07E+02					4.91E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	5.93E-01	J				6.20E-01	J			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	3.05E+02					1.09E+02	J			
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	8.31E+00					3.98E+01	J	YES	YES	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	3.43E+00					6.85E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.75E+00					1.08E+01				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	9.56E+03			YES	YES	3.90E+04		YES	YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	8.83E+01	J	YES		YES	1.89E+01	J			
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	3.77E+02					5.37E+02				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	5.26E+02			YES	YES	2.30E+02	J			YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	3.53E-02	J				1.13E-01	J	YES		YES
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	2.78E+00	B				9.83E+00				
Potassium	mg/kg	8.00E+02	NA	NA	3.37E+02	J				3.58E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	5.50E-01	J	YES			1.62E+00		YES		YES
Sodium	mg/kg	6.34E+02	NA	NA	ND					2.35E+01	J			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	9.74E+00				YES	5.31E+01			YES	YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.62E+01	J				2.22E+01	J			
VOLATILE ORGANIC COMPOUNDS														
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	NR					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	NR					6.90E-02	J			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	NR					ND				
p-Cymene	mg/kg	NA	1.55E+03	NA	NR					ND				

Table 5-1
Surface and Depositional Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan Calhoun County, Alabama

(Page 18 of 18)

Sample Location Sample Number Sample Date Sample Depth (Feet)					HR-97Q-GP09 QL0018 23-Jul-02 0- 1					HR-97Q-MW01 QL0020 24-Jul-02 0- 1				
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES														
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	NR					ND				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	NR					ND				
Aldrin	mg/kg	NA	3.65E-02	2.50E-03	NR					ND				
Dieldrin	mg/kg	NA	3.88E-02	5.00E-04	NR					ND				
Endrin	mg/kg	NA	2.32E+00	1.00E-03	NR					ND				
Endrin aldehyde	mg/kg	NA	2.32E-01	1.05E-02	NR					ND				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	NR					ND				
Heptachlor epoxide	mg/kg	NA	6.91E-02	1.52E-01	NR					ND				
Methoxychlor	mg/kg	NA	3.89E+01	1.99E-02	NR					ND				
alpha-BHC	mg/kg	NA	1.00E-01	2.50E-03	NR					ND				
beta-BHC	mg/kg	NA	3.50E-01	1.00E-03	NR					ND				
gamma-BHC (Lindane)	mg/kg	NA	4.85E-01	5.00E-05	NR					ND				
gamma-Chlordane	mg/kg	NA	1.69E+00	1.00E-01	NR					7.40E-04	J			
HERBICIDES														
2,4-D	mg/kg	NA	7.77E+01	1.00E-01	NR					ND				
MCPP	mg/kg	NA	7.77E+00	1.00E-01	NR					ND				
EXPLOSIVES														
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	1.28E+00	ND					ND				

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama* , July.

^b Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama* , July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

NR - Not requested.

Qual - Data validation qualifier.

Table 5-2

Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama

(Page 1 of 6)

Sample Location				HR-144Q-GP01				HR-144Q-GP02				HR-144Q-GP03				HR-144Q-GP04			
				QM0002 23-Jul-02 2 - 3				QM0004 23-Jul-02 2- 2.5				QM0006 23-Jul-02 1 - 2				QM0008 24-Jul-02 1.5- 2			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	1.71E+04		YES	YES	1.70E+04		YES	YES	7.62E+03				1.42E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	4.87E+00			YES	5.66E+00			YES	3.20E+00				3.48E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	5.18E+01				6.51E+01				5.02E+01				1.70E+02			
Beryllium	mg/kg	8.60E-01	9.60E+00	ND				4.36E-01	J			ND				9.93E-01	J	YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				1.70E+00			YES
Calcium	mg/kg	6.37E+02	NA	1.40E+02				1.35E+02				1.01E+04		YES		5.92E+02			
Chromium	mg/kg	3.83E+01	2.32E+01	1.83E+01				1.63E+01				7.97E+00				9.95E+00			
Cobalt	mg/kg	1.75E+01	4.68E+02	4.42E+00	J			5.18E+00	J			1.34E+00	J			6.30E+00	J		
Copper	mg/kg	1.94E+01	3.13E+02	9.08E+00				1.91E+01				2.02E+01		YES		9.50E+00			
Iron	mg/kg	4.48E+04	2.34E+03	2.94E+04			YES	2.06E+04			YES	1.14E+04			YES	1.19E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	2.03E+01	J			1.74E+02	J	YES		3.93E+01	J	YES		1.47E+01	J		
Magnesium	mg/kg	7.66E+02	NA	4.50E+02				5.89E+02				5.78E+03		YES		5.35E+02			
Manganese	mg/kg	1.36E+03	3.63E+02	3.28E+02	J			2.80E+02	J			1.56E+02	J			1.09E+03	J		YES
Mercury	mg/kg	7.00E-02	2.33E+00	7.66E-02	J	YES		6.13E-02	J			3.28E-02	J			6.00E-02	J		
Nickel	mg/kg	1.29E+01	1.54E+02	5.86E+00				8.00E+00				3.00E+00				6.14E+00			
Potassium	mg/kg	7.11E+02	NA	3.43E+02	J			4.30E+02	J			8.04E+02		YES		3.84E+02	J		
Selenium	mg/kg	4.70E-01	3.91E+01	1.59E+00	B	YES		9.02E-01	B	YES		ND				9.43E-01	B	YES	
Sodium	mg/kg	7.02E+02	NA	ND				ND				2.64E+01	J			2.19E+01	J		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	2.87E+01				2.77E+01				1.06E+01				1.43E+01			
Zinc	mg/kg	3.49E+01	2.34E+03	1.49E+01	J			2.77E+01	J			1.89E+01	J			2.42E+02	J	YES	
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	NR				NR				NR				1.10E-02	J		
Acetone	mg/kg	NA	7.76E+02	NR				NR				NR				1.90E-01	J		
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				ND			
p-Cymene	mg/kg	NA	1.55E+03	NR				NR				NR				ND			
PESTICIDES																			
Heptachlor	mg/kg	NA	1.40E-01	NR				NR				NR				1.10E-03	J		
alpha-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				ND			
gamma-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				ND			
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	ND				ND				2.50E-01	J			ND			

Table 5-2

Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama

(Page 2 of 6)

Sample Location				HR-144Q-MW01				HR-147Q-GP01				HR-147Q-MW01				HR-147Q-MW02			
				QM0011 23-Jul-02 2 - 4				QN0002 24-Jul-02 1.5 - 2				QN0004 25-Jul-02 1 - 2				QN0006 24-Jul-02 1.5 - 2			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	1.88E+04		YES	YES	1.00E+04			YES	1.07E+04			YES	1.03E+04			YES
Arsenic	mg/kg	1.83E+01	4.26E-01	3.72E+00			YES	2.95E+00			YES	3.31E+00			YES	2.95E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	7.55E+01				8.71E+01				6.15E+01				5.94E+01			
Beryllium	mg/kg	8.60E-01	9.60E+00	ND				3.87E-01	J			ND				ND			
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND			
Calcium	mg/kg	6.37E+02	NA	1.67E+02				1.83E+02				1.96E+02				1.07E+02	J		
Chromium	mg/kg	3.83E+01	2.32E+01	1.30E+01				7.31E+00				1.09E+01				1.09E+01			
Cobalt	mg/kg	1.75E+01	4.68E+02	3.39E+00	J			4.79E+00				2.52E+00				3.03E+00			
Copper	mg/kg	1.94E+01	3.13E+02	7.43E+00				3.39E+00				4.42E+00				5.90E+00			
Iron	mg/kg	4.48E+04	2.34E+03	1.41E+04			YES	8.66E+03			YES	1.54E+04			YES	1.37E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	1.36E+01	J			8.43E+00				9.96E+00				6.23E+00			
Magnesium	mg/kg	7.66E+02	NA	7.23E+02				3.83E+02				4.34E+02				4.72E+02			
Manganese	mg/kg	1.36E+03	3.63E+02	1.73E+02	J			2.79E+02				7.75E+01				9.63E+01			
Mercury	mg/kg	7.00E-02	2.33E+00	7.18E-02	J	YES		5.23E-02	J			4.04E-02	J			4.56E-02	J		
Nickel	mg/kg	1.29E+01	1.54E+02	6.27E+00				3.93E+00				4.16E+00				3.25E+00			
Potassium	mg/kg	7.11E+02	NA	5.39E+02	J			4.87E+02	J			4.83E+02	J			7.08E+02			
Selenium	mg/kg	4.70E-01	3.91E+01	9.60E-01	B	YES		ND				5.89E-01	B	YES		ND			
Sodium	mg/kg	7.02E+02	NA	ND				ND				ND				2.67E+01	J		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	2.24E+01				1.09E+01				1.42E+01				1.72E+01			
Zinc	mg/kg	3.49E+01	2.34E+03	2.26E+01	J			9.84E+00	J			1.15E+01	J			1.27E+01	J		
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	NR				NR				NR				NR			
Acetone	mg/kg	NA	7.76E+02	NR				NR				NR				NR			
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				NR			
p-Cymene	mg/kg	NA	1.55E+03	NR				NR				NR				NR			
PESTICIDES																			
Heptachlor	mg/kg	NA	1.40E-01	NR				NR				NR				NR			
alpha-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				NR			
gamma-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				NR			
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	ND				ND				ND				ND			

Table 5-2

Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama

(Page 3 of 6)

Sample Location				HR-97Q-GP01				HR-97Q-GP02				HR-97Q-GP03				HR-97Q-GP04			
				QL0002 23-Jul-02 1.5- 2.5				QL0004 23-Jul-02 1 - 2				QL0006 23-Jul-02 2.5- 3.5				QL0008 25-Jul-02 2 - 3			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	1.46E+04		YES	YES	1.90E+04		YES	YES	2.42E+04		YES	YES	3.47E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	3.36E+00			YES	5.54E+00			YES	7.41E+00			YES	9.89E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	7.67E+01				1.11E+02				9.42E+01				1.19E+02			
Beryllium	mg/kg	8.60E-01	9.60E+00	6.92E-01	J			8.41E-01	J			8.86E-01	J	YES		9.20E-01	J	YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND			
Calcium	mg/kg	6.37E+02	NA	9.01E+01	J			6.03E+03		YES		1.58E+02				2.37E+02			
Chromium	mg/kg	3.83E+01	2.32E+01	9.11E+00				1.65E+01				7.13E+01		YES	YES	3.80E+01			YES
Cobalt	mg/kg	1.75E+01	4.68E+02	1.45E+01				1.12E+01				9.88E+00				1.08E+01			
Copper	mg/kg	1.94E+01	3.13E+02	6.24E+00				1.94E+01				1.05E+01				1.94E+01			
Iron	mg/kg	4.48E+04	2.34E+03	1.36E+04			YES	3.81E+04			YES	4.39E+04			YES	4.81E+04		YES	YES
Lead	mg/kg	3.85E+01	4.00E+02	2.82E+01	J			1.05E+02	J	YES		4.43E+01	J	YES		2.80E+01	J		
Magnesium	mg/kg	7.66E+02	NA	4.34E+02				4.00E+03		YES		4.61E+02				8.68E+02		YES	
Manganese	mg/kg	1.36E+03	3.63E+02	1.83E+03		YES	YES	2.26E+03		YES	YES	9.71E+02			YES	5.98E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	7.74E-02	J	YES		1.08E-01	J	YES		7.96E-02	J	YES		1.02E-01	J	YES	
Nickel	mg/kg	1.29E+01	1.54E+02	6.96E+00				1.32E+01		YES		8.59E+00				1.47E+01		YES	
Potassium	mg/kg	7.11E+02	NA	2.74E+02	J			6.35E+02				3.06E+02	J			7.83E+02		YES	
Selenium	mg/kg	4.70E-01	3.91E+01	8.49E-01	J	YES		1.83E+00		YES		2.08E+00		YES		1.45E+00		YES	
Sodium	mg/kg	7.02E+02	NA	2.20E+01	J			3.93E+01	J			ND				3.15E+01	J		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				1.11E+00	J		YES	1.25E+00	J			1.68E+00	J	YES	YES
Vanadium	mg/kg	6.49E+01	5.31E+01	1.89E+01				2.39E+01				3.95E+01				6.52E+01		YES	YES
Zinc	mg/kg	3.49E+01	2.34E+03	1.71E+01	J			1.52E+03	J	YES		1.97E+01	J			3.63E+01	J	YES	
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	NR				NR				NR				1.30E-02	J		
Acetone	mg/kg	NA	7.76E+02	NR				NR				NR				2.70E-01	J		
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				1.50E-03	J		
p-Cymene	mg/kg	NA	1.55E+03	NR				NR				NR				4.10E-03	J		
PESTICIDES																			
Heptachlor	mg/kg	NA	1.40E-01	NR				NR				NR				2.20E-03	J		
alpha-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				1.50E-03	J		
gamma-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR				1.50E-03	J		
EXPLOSIVES																			
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	ND				ND				ND				ND			

Table 5-2

Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama

(Page 4 of 6)

Sample Location				HR-97Q-GP05				HR-97Q-GP06				HR-97Q-GP07			
				QL0011				QL0013				QL0015			
				24-Jul-02				29-Jul-02				25-Jul-02			
Sample Depth (Feet)				2.5- 3.5				1 - 2				2 - 3			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS															
Aluminum	mg/kg	1.36E+04	7.80E+03	3.57E+04		YES	YES	1.85E+04		YES	YES	1.58E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	1.06E+01			YES	3.90E+00			YES	4.30E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	1.07E+02				4.47E+01				7.57E+01			
Beryllium	mg/kg	8.60E-01	9.60E+00	8.38E-01	J			ND				4.30E-01	J		
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND			
Calcium	mg/kg	6.37E+02	NA	2.08E+02				1.55E+02				1.03E+02	J		
Chromium	mg/kg	3.83E+01	2.32E+01	2.48E+01			YES	2.20E+01				1.46E+01			
Cobalt	mg/kg	1.75E+01	4.68E+02	1.09E+01				1.76E+00	J			1.22E+01			
Copper	mg/kg	1.94E+01	3.13E+02	1.42E+01				1.19E+01				6.11E+00			
Iron	mg/kg	4.48E+04	2.34E+03	3.90E+04			YES	2.27E+04			YES	2.02E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	2.66E+01	J			5.16E+01		YES		2.95E+01			
Magnesium	mg/kg	7.66E+02	NA	9.59E+02		YES		3.87E+02				3.61E+02			
Manganese	mg/kg	1.36E+03	3.63E+02	8.90E+02			YES	4.75E+01				8.14E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	1.09E-01	J	YES		9.60E-02	J	YES		1.38E-01			YES
Nickel	mg/kg	1.29E+01	1.54E+02	1.50E+01		YES		4.14E+00				7.20E+00			
Potassium	mg/kg	7.11E+02	NA	6.39E+02				1.89E+02	B			1.44E+02	B		
Selenium	mg/kg	4.70E-01	3.91E+01	1.85E+00		YES		5.50E-01	J	YES		5.43E-01	J	YES	
Sodium	mg/kg	7.02E+02	NA	2.32E+01	J			ND				2.24E+01	B		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	5.55E+01			YES	3.21E+01				2.69E+01			
Zinc	mg/kg	3.49E+01	2.34E+03	3.45E+01	J			1.45E+01				1.35E+01			
VOLATILE ORGANIC COMPOUNDS															
2-Butanone	mg/kg	NA	4.66E+03	NR				NR				NR			
Acetone	mg/kg	NA	7.76E+02	NR				NR				NR			
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR			
p-Cymene	mg/kg	NA	1.55E+03	NR				NR				NR			
PESTICIDES															
Heptachlor	mg/kg	NA	1.40E-01	NR				NR				NR			
alpha-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR			
gamma-Chlordane	mg/kg	NA	1.69E+00	NR				NR				NR			
EXPLOSIVES															
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	ND				ND				ND			

Table 5-2

Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama

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Sample Location				HR-97Q-GP08				HR-97Q-GP09				HR-97Q-MW01			
				QL0017				QL0019				QL0022			
				25-Jul-02				23-Jul-02				24-Jul-02			
Sample Depth (Feet)				1 - 2				1 - 2				1.5- 2.5			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS															
Aluminum	mg/kg	1.36E+04	7.80E+03	2.42E+04		YES	YES	7.99E+03		YES	7.02E+04		YES	YES	
Arsenic	mg/kg	1.83E+01	4.26E-01	4.29E+00			YES	2.96E+00			YES	1.28E+01			YES
Barium	mg/kg	2.34E+02	5.47E+02	2.10E+01				9.59E+01				1.20E+02			
Beryllium	mg/kg	8.60E-01	9.60E+00	ND				5.31E-01	J			6.91E-01	J		
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND			
Calcium	mg/kg	6.37E+02	NA	6.70E+01	J			2.10E+02				1.24E+02			
Chromium	mg/kg	3.83E+01	2.32E+01	3.54E+01			YES	8.20E+00				4.43E+01		YES	YES
Cobalt	mg/kg	1.75E+01	4.68E+02	ND				3.37E+00				4.97E+00			
Copper	mg/kg	1.94E+01	3.13E+02	1.14E+01				5.83E+00				1.87E+01			
Iron	mg/kg	4.48E+04	2.34E+03	3.40E+04			YES	9.35E+03			YES	4.90E+04		YES	YES
Lead	mg/kg	3.85E+01	4.00E+02	2.13E+01				2.75E+01	J			2.40E+01	J		
Magnesium	mg/kg	7.66E+02	NA	2.68E+02				3.70E+02				7.84E+02		YES	
Manganese	mg/kg	1.36E+03	3.63E+02	3.26E+01				4.40E+02			YES	2.31E+02			
Mercury	mg/kg	7.00E-02	2.33E+00	2.34E-01		YES		ND				1.43E-01		YES	
Nickel	mg/kg	1.29E+01	1.54E+02	2.53E+00	B			2.32E+00	B			1.64E+01		YES	
Potassium	mg/kg	7.11E+02	NA	1.16E+02	B			3.24E+02	J			6.45E+02			
Selenium	mg/kg	4.70E-01	3.91E+01	ND				ND				2.02E+00		YES	
Sodium	mg/kg	7.02E+02	NA	2.38E+01	B			2.15E+01	J			3.56E+01	J		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	5.72E+01			YES	9.78E+00				8.18E+01		YES	YES
Zinc	mg/kg	3.49E+01	2.34E+03	1.04E+01				1.36E+01	J			3.74E+01	J	YES	
VOLATILE ORGANIC COMPOUNDS															
2-Butanone	mg/kg	NA	4.66E+03	NR				NR				ND			
Acetone	mg/kg	NA	7.76E+02	NR				NR				5.20E-02	J		
Toluene	mg/kg	NA	1.55E+03	NR				NR				ND			
p-Cymene	mg/kg	NA	1.55E+03	NR				NR				ND			
PESTICIDES															
Heptachlor	mg/kg	NA	1.40E-01	NR				NR				ND			
alpha-Chlordane	mg/kg	NA	1.69E+00	NR				NR				ND			
gamma-Chlordane	mg/kg	NA	1.69E+00	NR				NR				ND			
EXPLOSIVES															
2,4-Dinitrotoluene	mg/kg	NA	9.27E-01	ND				ND				ND			

Table 5-2

**Subsurface Soil Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama**

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Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama* , July.

^b Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama* , July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

NR - Not requested.

Qual - Data validation qualifier.

Table 5-3

**Groundwater Analytical Results
Former Range 43, Parcel 97Q; Range, Parcel 144Q-X; and Impact Area, Parcel 147Q-X
Fort McClellan, Calhoun County, Alabama**

Sample Location			HR-147Q-MW02			
Sample Number			QN3002			
Sample Date			23-Aug-02			
Parameter	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL
METALS						
Aluminum	2.34E+00	1.56E+00	5.83E-02	B		
Barium	1.27E-01	1.10E-01	1.40E-02			
Calcium	5.65E+01	NA	1.24E+00			
Iron	7.04E+00	4.69E-01	6.74E-02	J		
Magnesium	2.13E+01	NA	7.09E-01	J		
Manganese	5.81E-01	7.35E-02	3.91E-01			YES
Potassium	7.20E+00	NA	2.44E+00	J		
Sodium	1.48E+01	NA	1.07E+00			

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^b Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.

NA - Not available.

Qual - Data validation qualifier.

- Antimony (11.1 and 22.5 mg/kg) exceeded its SSSL (3.11 mg/kg) and background (1.99 mg/kg) at two sample locations (HR-144Q-GP04 and HR-97Q-GP02). Both of the antimony results were flagged with a “J” data qualifier, indicating that the results were estimated.
- Cadmium (18.8 mg/kg) exceeded its SSSL (6.25 mg/kg) and background (0.29 mg/kg) at sample location HR-144Q-GP04.
- Chromium (39.8 mg/kg) exceeded its SSSL (23.1 mg/kg) and background (37 mg/kg) at sample location HR-97Q-MW01.
- Iron (35,700 to 62,000 mg/kg) exceeded its SSSL (2,345 mg/kg) and background (34,154 mg/kg) at four sample locations.
- Lead (401 to 1,270 mg/kg) exceeded its SSSL (400 mg/kg) and background (40 mg/kg) at six sample locations. Four of the lead results were flagged with a “J” data qualifier, indicating that the results were estimated.
- Manganese (1,650 to 2,180 mg/kg) exceeded its SSSL (363 mg/kg) and background (1,579 mg/kg) at five sample locations.
- Zinc (3,510 and 9,540 mg/kg) exceeded its SSSL (2,341 mg/kg) and background (41 mg/kg) at two sample locations. The zinc results were flagged with a “J” data qualifier, indicating that the results were estimated.

Figure 5-1 shows the surface and depositional soil sample locations with metals results exceeding SSSLs and background.

Sixteen metals were detected at concentrations exceeding ESVs: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, selenium, thallium, vanadium, and zinc. Of these, 13 metals also exceeded their respective background concentrations:

- Aluminum (17,700 to 36,100 mg/kg) exceeded its ESV (50 mg/kg) and background (16,306 mg/kg) at seven sample locations.
- Antimony (11.1 and 22.5 mg/kg) exceeded its ESV (3.5 mg/kg) and background (1.99 mg/kg) at two sample locations.
- Barium (193 to 531 mg/kg) exceeded its ESV (165 mg/kg) and background (124 mg/kg) at three sample locations.

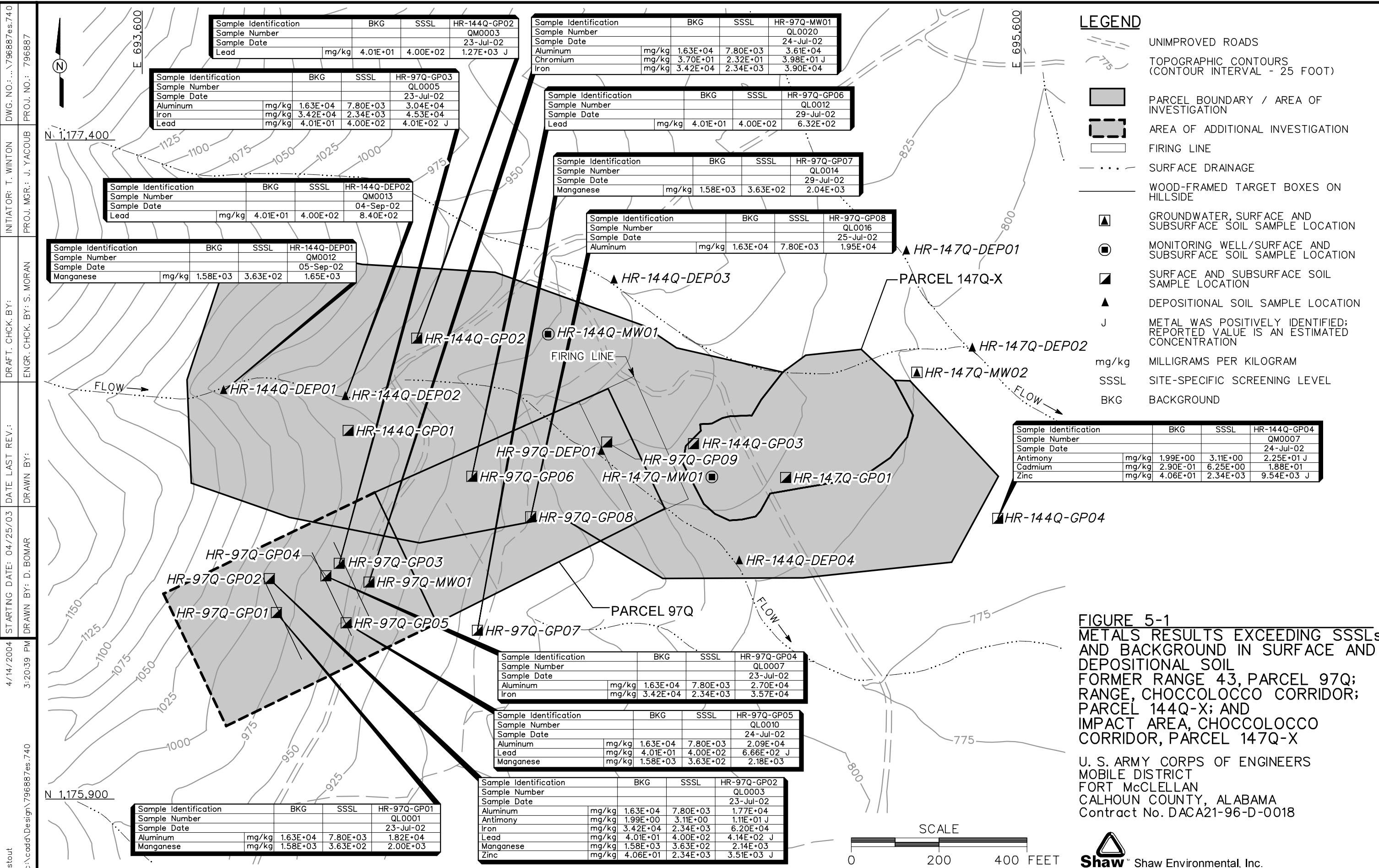


FIGURE 5-1
METALS RESULTS EXCEEDING SSSLs
AND BACKGROUND IN SURFACE AND
DEPOSITIONAL SOIL
FORMER RANGE 43, PARCEL 97Q;
RANGE, CHOCOLOCCO CORRIDOR;
PARCEL 144Q-X; AND
IMPACT AREA, CHOCOLOCCO
CORRIDOR. PARCEL 147Q-X

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



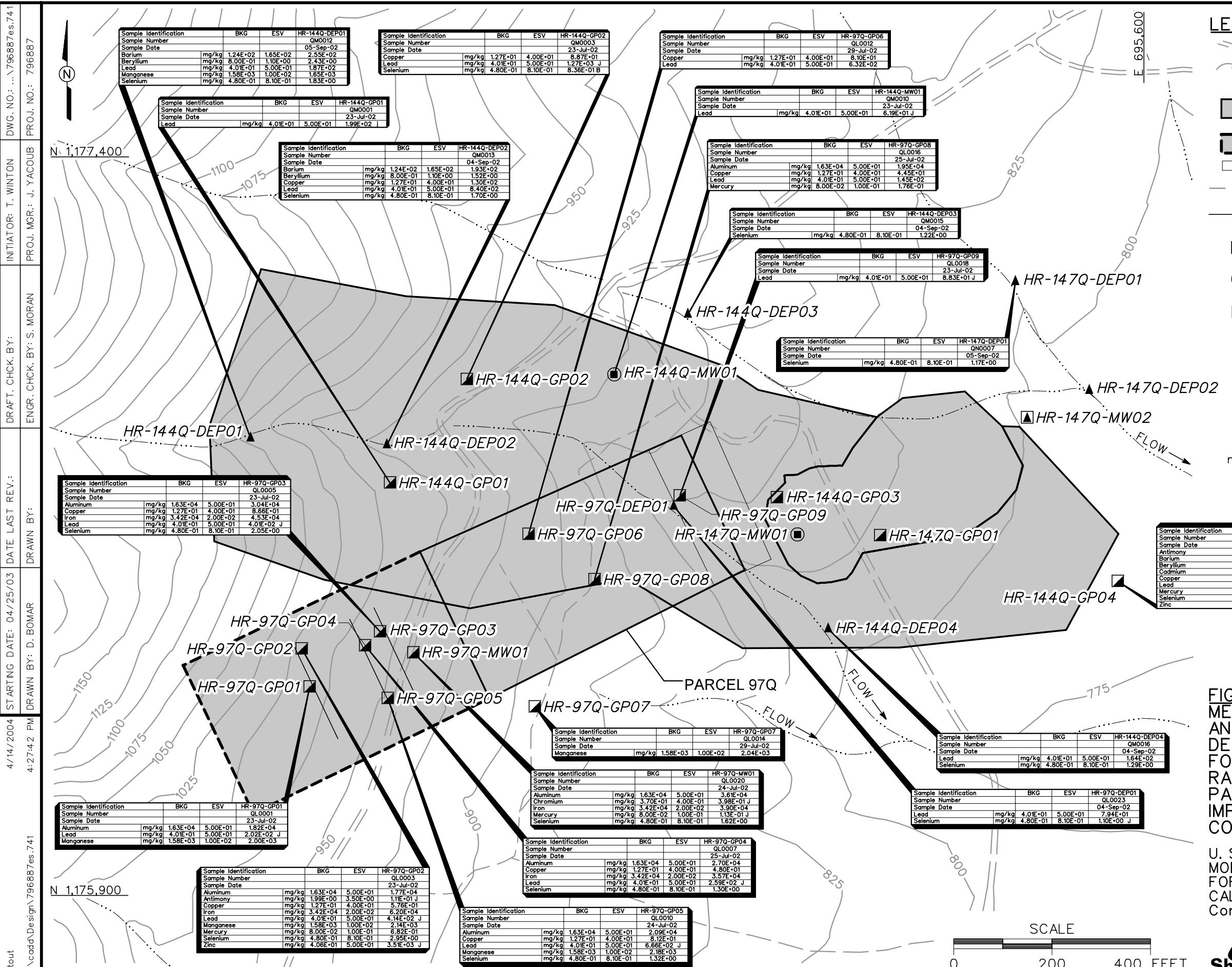
Shaw™ Shaw Environmental, Inc.

- Beryllium (1.11 to 2.43 mg/kg) exceeded its ESV (1.1 mg/kg) and background (0.8 mg/kg) at three sample locations.
- Cadmium (18.8 mg/kg) exceeded its ESV (1.6 mg/kg) and background (0.29 mg/kg) at sample location HR-144Q-GP04.
- Chromium (39.8 mg/kg) exceeded its ESV (0.4 mg/kg) and background (37 mg/kg) at sample location HR-97Q-MW01.
- Copper (44.5 to 130 mg/kg) exceeded its ESV (40 mg/kg) and background (12.7 mg/kg) at nine sample locations.
- Iron (35,700 to 62,000 mg/kg) exceeded its ESV (200 mg/kg) and background (34,154 mg/kg) at four sample locations.
- Lead (61.9 to 1,270 mg/kg) exceeded its ESV (50 mg/kg) and background (40 mg/kg) at 16 sample locations.
- Manganese (1,650 to 2,180 mg/kg) exceeded its ESV (100 mg/kg) and background (1,579 mg/kg) at five sample locations.
- Mercury (0.113 to 0.682 mg/kg) exceeded its ESV (0.1 mg/kg) and background (0.08 mg/kg) at four sample locations.
- Selenium (0.836 to 2.95 mg/kg) exceeded its ESV (0.81 mg/kg) and background (0.48 mg/kg) at 13 sample locations.
- Zinc (3,510 and 9,540 mg/kg) exceeded its ESV (50 mg/kg) and background (40.6 mg/kg) at two sample locations.

Figure 5-2 shows the surface and depositional soil sample locations with metals results exceeding ESVs and background.

Volatile Organic Compounds. Four surface and depositional soil sample locations were analyzed for VOCs (HR-144Q-DEP04, HR-144Q-GP04, HR-97Q-GP04, and HR-97Q-MW01). A total of four VOCs (2-butanone, acetone, p-cymene, and toluene) were detected in the samples at concentrations below their respective SSSLs and ESVs.

Semivolatile Organic Compounds. Four surface and depositional soil sample locations were analyzed for SVOCs (HR-144Q-DEP04, HR-144Q-GP04, HR-97Q-GP04, and HR-97Q-MW01). SVOCs were not detected in the samples.



Pesticides. Four surface and depositional soil sample locations were analyzed for pesticides (HR-144Q-DEP04, HR-144Q-GP04, HR-97Q-GP04, and HR-97Q-MW01). A total of 13 pesticides (4,4'-dichlorodiphenyldichloroethene [DDE], 4,4'-dichlorodiphenyltrichloroethane [DDT], aldrin, alpha-hexachlorocyclohexane [BHC], beta-BHC, dieldrin, endrin, endrin aldehyde, gamma-BHC, gamma-chlordane, heptachlor, heptachlor epoxide, and methoxychlor) were detected in the samples. All but one of the pesticide results were flagged with a "J" data qualifier, indicating that the compounds were detected at estimated concentrations below method reporting limits. The pesticide concentrations were below their respective SSSLs. The concentrations of eight pesticides exceeded ESVs:

- 4,4'-DDE (0.003 mg/kg) exceeded its ESV (0.0025 mg/kg) at sample location HR-144Q-GP04.
- 4,4'-DDT (0.0033 and 0.0035 mg/kg) exceeded its ESV (0.0025 mg/kg) at two sample locations (HR-144Q-GP04 and HR-97Q-GP04).
- Aldrin (0.0025 and 0.012 mg/kg) exceeded its ESV (0.0025 mg/kg) at two sample locations (HR-144Q-GP04 and HR-97Q-GP04).
- Beta-BHC (0.0013 mg/kg) exceeded its ESV (0.001 mg/kg) at sample location HR-144Q-GP04.
- Dieldrin (0.00096 and 0.002 mg/kg) exceeded its ESV (0.0005 mg/kg) at two sample locations (HR-144Q-GP04 and HR-97Q-GP04).
- Endrin (0.0063 mg/kg) exceeded its ESV (0.001 mg/kg) at sample location HR-144Q-DEP04.
- Gamma-BHC (0.00086 mg/kg) exceeded its ESV (0.00005 mg/kg) at sample location HR-144Q-GP04.
- Methoxychlor (0.026 mg/kg) exceeded its ESV (0.02 mg/kg) at sample location HR-144Q-GP04.

Herbicides. Four surface and depositional soil sample locations were analyzed for herbicides (HR-144Q-DEP04, HR-144Q-GP04, HR-97Q-GP04, and HR-97Q-MW01). Two herbicides (2,4-dichlorophenoxyacetic acid and 2-[2-methyl-4-chlorophenoxy]propionic acid [MCPP]) were detected at one sample location each (HR-144Q-GP04 and HR-97Q-GP04, respectively). Both results were flagged with a "J" data qualifier, indicating that the results were estimated. The herbicide results were below their respective SSSLs; however, the MCPP result (2.2 mg/kg) exceeded its ESV (0.1 mg/kg).

Explosives. The explosive 2,4-dinitrotoluene was detected at an estimated concentration (0.11 mg/kg) below its SSSL and ESV at one sample location (HR-144Q-GP03).

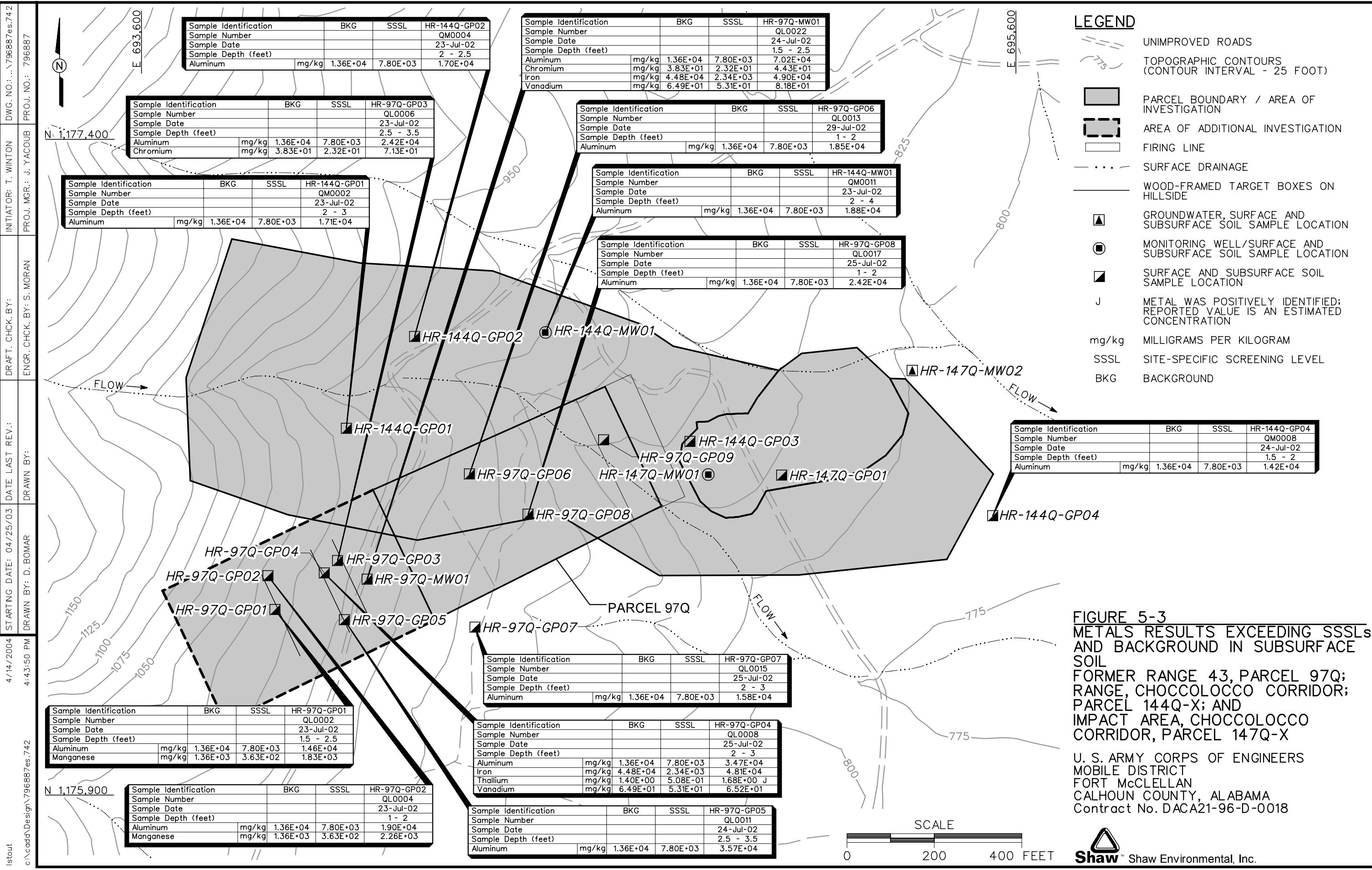
5.2 Subsurface Soil Analytical Results

Eighteen subsurface soil samples were collected for chemical analysis at Parcels 97Q, 144Q-X, and 147Q-X. Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and metals background concentrations, as presented in Table 5-2.

Metals. A total of 21 metals were detected in the subsurface soil samples. The concentrations of seven metals (aluminum, arsenic, chromium, iron, manganese, thallium, and vanadium) exceeded their respective SSSLs in one or more samples. Of these, six metals also exceeded their respective background concentrations:

- Aluminum (14,200 to 70,200 mg/kg) exceeded its SSSL (7,803 mg/kg) and background (13,591 mg/kg) at 13 sample locations.
- Chromium (44.3 and 71.3 mg/kg) exceeded its SSSL (23.2 mg/kg) and background (38.3 mg/kg) at two sample locations (HR-97Q-GP03 and HR-97Q-MW01).
- Iron (48,100 and 49,000 mg/kg) exceeded its SSSL (2,345 mg/kg) and background (44,817 mg/kg) at two sample locations (HR-97Q-GP04 and HR-97Q-MW01).
- Manganese (1,830 and 2,260 mg/kg) exceeded its SSSL (363 mg/kg) and background (1,355 mg/kg) at two sample locations (HR-97Q-GP01 and HR-97Q-GP02).
- Thallium (1.68 mg/kg) exceeded its SSSL (0.51 mg/kg) and background (1.4 mg/kg) at sample location HR-97Q-GP04.
- Vanadium (65.2 and 81.8 mg/kg) exceeded its SSSL (53.1 mg/kg) and background (64.9 mg/kg) at two sample locations (HR-97Q-GP04 and HR-97Q-MW01).

Figure 5-3 shows the subsurface soil sample locations with metals results exceeding SSSLs and background.



Volatile Organic Compounds. Three subsurface soil sample locations were analyzed for VOCs (HR-97Q-GP04, HR-97Q-MW01, and HR-144Q-GP04). A total of four VOCs (acetone, 2-butanone, p-cymene, and toluene) were detected in the samples at estimated concentrations below their respective SSSLs.

Semivolatile Organic Compounds. Three subsurface soil sample locations were analyzed for SVOCs (HR-97Q-GP04, HR-97Q-MW01, and HR-144Q-GP04). SVOCs were not detected in the samples.

Pesticides. Three subsurface soil sample locations were analyzed for pesticides (HR-97Q-GP04, HR-97Q-MW01, and HR-144Q-GP04). A total of three pesticides (heptachlor, alpha-chlordane, and gamma-chlordane) were detected in the samples at estimated concentrations below their respective SSSLs.

Herbicides. Three subsurface soil sample locations were analyzed for herbicides (HR-97Q-GP04, HR-97Q-MW01, and HR-144Q-GP04). Herbicides were not detected in the samples.

Explosives. The explosive compound 2,4-dinitrotoluene was detected at an estimated concentration (0.25 mg/kg) below its SSSL at one sample location (HR-144Q-GP03).

5.3 Groundwater Analytical Results

One groundwater sample was collected for chemical analysis at Parcels 97Q, 144Q-X, and 147Q-X, at the location shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and metals background concentrations, as presented in Table 5-3. The groundwater sample was analyzed for metals and explosive compounds only.

Metals. Eight metals (aluminum, barium, calcium, iron, magnesium, manganese, potassium, and sodium) were detected in the groundwater sample. Only the concentration of manganese (0.391 milligrams per liter) exceeded its respective SSSL (0.0735 milligrams per liter) at HR-147Q-MW02. The manganese result, however, was below its background value.

Explosives. Explosives were not detected in the groundwater sample.

6.0 Summary, Conclusions, and Recommendations

Under contract to the USACE, Shaw completed an SI at Former Range 43, Parcel 97Q; Range, Choccolocco Corridor, Parcel 144Q-X; and Impact Area, Choccolocco Corridor, Parcel 147Q-X, at FTMC in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site as a result of historical mission-based Army activities. The SI consisted of the collection and analysis of 25 surface and depositional soil samples, 18 subsurface soil samples, and 1 groundwater sample. In addition, three permanent residuum monitoring wells were installed to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information. However, two of the wells did not produce sufficient water for sampling.

Chemical analysis of samples collected at the site indicates that metals, VOCs, pesticides, two herbicides, and one explosive compound were detected in site media. Analytical results were compared to SSSLs, ESVs, and background screening values developed for human health and ecological risk evaluations as part of investigations being performed under the BRAC Environmental Restoration Program at FTMC.

Constituents detected at concentrations exceeding SSSLs and background (where available) were identified as COPCs in site media. COPCs included eight metals (aluminum, antimony, cadmium, chromium, iron, lead, manganese, and zinc) in surface soil and six metals (aluminum, chromium, iron, manganese, thallium, and vanadium) in subsurface soil. The most significant COPC is lead, which was detected at concentrations (401 to 1,270 mg/kg) exceeding its residential SSSL (400 mg/kg) in six surface soil samples. VOC, pesticide, herbicide, and explosive compound concentrations in site media were all below SSSLs.

Constituents detected at concentrations exceeding ESVs and background (where available) were identified as constituents of potential ecological concern (COPEC) in surface soil. COPECs included 13 metals (aluminum, antimony, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, selenium, and zinc), eight pesticides (4,4'-DDE, 4,4'-DDT, aldrin, beta-BHC, gamma-BHC, endrin, dieldrin, and methoxychlor), and one herbicide (MCPP). VOC and explosive compound concentrations in site media were below ESVs.

Based on the results of the SI, past operations at Parcels 97Q, 144Q-X, and 147Q-X have impacted the environment. Therefore, Shaw recommends that a remedial investigation be conducted to determine the extent of contamination in soil at Former Range 43, Parcel 97Q; Range, Choccolocco Corridor, Parcel 144Q-X; and Impact Area, Choccolocco Corridor, Parcel 147Q-X.

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